

REMARKS

Attached hereto is a Petition and fee for a second month's time extension. An RCE is also filed concurrently hereto. It is noted that the first month's time extension was paid in the submittal dated July 7, 2005.

Claims 18-35 are all of the claims currently pending. Claims 1-17 are canceled and new claims 25-35 are added. It is noted that the claim amendments include an attempt to address the Examiner's concerns for the indefiniteness issue. Applicants also request that the Examiner provide some indication of wording that would be acceptable to the Examiner, should the revised wording still not be acceptable, since the present invention clearly differs from the prior art currently of record and allowance is simply contingent upon finding wording that this Examiner finds acceptable.

Claims 18-35 are all the claims presently pending in the application. Claim 18 has been amended to more particularly define the invention.

It is noted that Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-23 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1-24 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Clarke (U.S. Patent No. 6,462,795), further in view of Shanks (U.S. Patent No. 4,414,565).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

As described by, for example, claim 18, the claimed invention is directed to an image display apparatus providing an enhanced impression of an optical perspective. At least one

micro lens array assembly comprising a plurality of convex micro lenses is arranged in at least one convex micro lenses matrix to thereby form a lens system.

For each micro lens array assembly, a display located relative to the micro lens array assembly projects a two-dimensional image through the micro lens array assembly to be focused on an opposite side thereof as an imaging plane. Each micro lens array assembly is configured to create an imaging plane displaying an erecting real image of the two-dimensional image at a same magnification.

The imaging plane provides an enhanced three-dimensional impression of said two-dimensional image by providing an illusion of depth in the displayed real image that is consistent with a three-dimensional object.

As discussed in the second full paragraph on page 2 of the specification, in the conventional method of enhancing the three-dimensional effect using lenticular lens, special strip-shaped images are required.

The claimed invention, on the other hand, allows a simple (e.g., non-modified) two-dimensional image to be enhanced without special viewer glasses or constructing special versions of the two-dimensional image.

In another aspect described by new claim 25, the present invention also addresses an image display apparatus that includes a display for displaying a two-dimensional image and a micro lens array spaced apart from the display for creating an imaging plane displaying an erecting real image of the two-dimensional image at a same magnification in a space opposite the display, the micro lens array being not parallel to the display.

An advantage of this aspect of the present invention is that the created image has always the same size regardless of the distance between the display and the micro lens array.

II. THE 35 USC §112, SECOND PARAGRAPH REJECTION

Claims 18-23 stand rejected under 35 U.S.C. §112, second paragraph. Although Applicants believe that one of ordinary skill in the art would readily understand the meaning of the original claim language, to expedite prosecution, the claims have been amended, above, to attempt to overcome this rejection. Specifically, wording is changed to attempt to address the Examiner's concerns, as best understood.

Indeed, it remains uncertain to Applicants what exactly the Examiner considers indefinite about either the present or previous claim language, since this language clearly describes exactly the result and effect provided by the configuration of the claimed invention.

Moreover, as best understood, the Examiner seems to consider that the wording of recently-added claim 24 does not suffer from the indefiniteness of claims 18-23. However, the rejection currently of record fails to recognize that the wording to claim 24, by overcoming the Examiner's perceived indefiniteness, inherently means that at least some dependent claims in claims 18-23 would have similar language addressing indefiniteness acceptable to the Examiner.

Accordingly, because of the inherent inconsistency in the Examiner's position of indefiniteness in the two claim sets, Applicants submit that the evaluation is based on a subjective basis rather than an objective basis.

That is, the Examiner seems to consider indefiniteness as a subjective evaluation wherein each Examiner decides whether subjective amount of details is included in the independent claims and, in the present instance, the lack of details of how this effect is achieved causes indefiniteness. Applicants submit that, if such is the Examiner's analysis of the claim language for indefiniteness, the Examiner is using the wrong legal standard.

As clearly described in MPEP §2173.04 ("*Breadth of a claim is not to be equated with indefiniteness.*"), indefiniteness due to undue breadth of the claim is appropriate in a case

when Applicants have made statements outside the application as filed. The Examiner points to no such statements.

Finally, it is also pointed out that creating distortion in a projected image can be done in a manner so that the displayed real image of a two-dimensional image is intentionally distorted to detract from (e.g., rather than enhance) the three-dimensional effect. Applicants submit that, because of the plain meaning of the claim language clearly describes the effect of the distortion induced by the present invention, this language is inherently definite.

Therefore, Applicants respectfully request that the Examiner indicate on the record the wording that he considers appropriate, so that this issue is resolved prior to appeal.

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. THE PRIOR ART REJECTIONS

Before addressing the prior art rejections, Applicants first explain the significance of the new claims 25-35, since neither Clarke nor Shanks teach the micro lens array described by the newly added independent claim 25.

Claim 25 recites that the micro lens array creates an erecting image at the same magnification, meaning substantially 100% magnification. As mention previously, one advantage of such micro lens array is that the created image has always the same size regardless of the distance between the display and the micro lens array.

In other words, the image shown in the display is simply projected in the space without any modification. If the micro lens array does not create an erecting image at 100% magnification, and the claimed invention were to be used in the same manner as shown in Clarke, then the projected image has some distortions at the edge, because the magnification of the projected image changes with the distance between the display and the micro lens

array. The same can be said concerning Shanks. In fact, Shanks even takes advantage of such different magnifications.

New claim 26 sets forth that all the convex lenses in the micro lens array have the same shape. This aspect makes the manufacturing of the micro lens array easy. Another advantage of having the same lenses is that tolerance is given to placement of the lens array. If the lenses have different radius of curvature, very precise placing of the lens array is required.

Specifically, if the distance between the display and the micro lens array is not exactly the intended distance, then the intended magnification is not achieved in the projected image and, therefore, the projected image will distort.

Clarke, at lines 32-36 of column 5 explicitly mentions that the micro lenses in the array 22 have different radius of curvature. In contrast, the same shape of the lens, as defined in claim 26, inherently provides the present invention with a margin, since some misplacement of the micro lens array does not affect the magnification of the projected image because the micro lens array creates an erecting image at the same magnification as the original magnification (e.g., 100% magnification). In the present invention, the lenses in the lens array do not have to be changed to those having different sizes, even if the distance between the lens array and the display changes.

Concerning new claim 28, this claim reflects the embodiment shown in Figure 11. The micro lens array is flat (or does not bend). The micro lens array 22 of Clarke bends. The flat micro lens array has a larger angle of view than the bending micro lens array. If the micro lens array bends, the light passing through the micro lens array refracts in different directions so that some light does not proceed towards a viewer.

This effect makes the periphery of the projected image non-visible. In other words, the angle of view is made smaller.

In contrast, in this embodiment of the present invention of Figure 11, the micro lens array is flat, so that the light passing through the micro lens array proceeds straight. Therefore, as shown in the attachment illustration following page 15 of this Amendment, the angle of view is not affected.

Relative to the rejection currently of record, the Examiner alleges that Clarke, further in view of Shanks, renders obvious claims 1-24.

Applicants submit, however, that there are elements of the claimed invention which are neither taught nor suggested by Clarke. The Examiner relies on Shanks at lines 3-7 in column 3. Shanks uses the curved saddle-shaped surface 3 of glass in order to display an image. This surface 3 is not needed in the present invention, since it displays the image in space. Clark also requires a screen to display an image, in contrast to the present invention.

Thus, the present invention creates a three-dimensional-like image in space. Shanks and Clarke both create their three-dimensional-like image on a physically existing surface (e.g., a bent glass or screen). Applicants submit that the viewer has a more enhanced three-dimensional impression in the present invention than in either Shanks or Clark.

Hence, turning to the clear language of the claims, there is no teaching or suggestion in Clarke/Shanks for: "...an image transmitting panel spaced apart from the image display surface for creating an imaging plane displaying a real image of the two-dimensional image in a space opposite to the display, wherein the image transmitting panel and the imaging plane are non-parallel with each other, so that said real image displayed opposite said display has an enhanced three-dimensional impression of said two-dimensional image ...", as required by independent claim 1, now canceled. The remaining independent claims have similar wording.

Moreover, Applicant submits that Clarke expressly teaches against the modification that would be required to satisfy the plain meaning of the language of the independent claims.

Specifically, as clearly described in lines 24-31 of column 1, the purpose of Clarke is to provide a curved viewing screen 12 that conforms to the contour of a dashboard or head rest, or, more generally, as described in lines 64-65 of column 1, to “... *present a continuous surface conforming to, and flush with, the surface contour of a surrounding structure.*”

There is no mention, teaching, or suggestion in Clarke of achieving the effect of the present invention in which the projected two-dimensional image has an enhanced three-dimensional effect.

The Examiner seems to agree that Clarke lacks a suggestion to provide an imaging plane that provides an enhanced impression of three-dimensions. To overcome this deficiency, the Examiner introduces Shanks and alleges that, because Shanks teaches that “... a curved or unparallel imaging plane 3 can create a three dimensional characteristics as shown in figure 2c (col. 3, lines 3-7)”, one of ordinary skill in the art would have been motivated to modify Clarke “... *for the purpose of creating a three-dimensional impression to the image.*”

Applicants respectfully submit that there are several problems with this analysis, so that impermissible hindsight is clearly involved.

First, the surface in Shanks is specifically designed for creating the three-dimensional effect. This specific surface is typically not part of the surrounding structure in an automobile dashboard or headrest. In short, the modification that would have to occur in Clarke to implement the technique of Shanks would require that the dashboard or headrest (or other “surrounding structure”) be re-designed specifically in accordance with Shanks. There is no suggestion to do so in either Clarke or Shanks.

Second, because of this specific surface shape requirement of Shanks, Applicants submit that the surrounding surface of Clarke would have to be modified in a manner that would modify or defeat its original function as a dashboard or headrest. Therefore, the urged

modification is improper under MPEP §2143.01: *“If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.”*

Third, in order to create the enhanced three-dimensional effect, the technique in Shanks additionally requires that the image be distorted, as explained at lines 5-17 of column 3 therein. Thus, additional modification is required to Clarke than merely adopting the specific shape of the surface described in Shanks.

There is no such suggestion in Clarke to provide a distortion of the image that would be necessary to generate the enhanced three-dimensional effect, and the rejection currently of record fails to address this additional modification.

Fourth, relative to the Examiner’s motivation to modify Clarke in accordance with Shanks to achieve a three-dimensional enhancement, Applicants submit that a key principle of operation in the primary reference Clarke is that of conforming “... *with the contour of a support structure* ...” (see Abstract, as well as the recitation above from lines 64-65 of column 1). If the Examiner imposes the shape described in Shanks into Clarke, this principle of operation is changed into the principle of operation of Shanks of providing an enhanced three-dimensional effect.

Applicants submit that such modification of the primary reference Clarke to summarily change the principle of operation therein is improper under MPEP §2143.01: *“If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.”*

Therefore, Applicants submit that modification of Clarke by Shanks would be improper and that, indeed, Clarke cannot be modified in the manner that would be necessary to satisfy the plain meaning of the independent claims without violating the objective

standards of evaluation recited above from the MPEP.

Hence, turning to the clear language of the claims, there is no teaching or suggestion in Clarke for: "... wherein the image transmitting panel and the imaging plane are non-parallel with each other, so that said real image displayed opposite said display has an enhanced three-dimensional impression of said two-dimensional image by providing an illusion of depth in the displayed real image that is consistent with a three-dimensional object", as required by claim 1. The remaining independent claims have similar wording.

Therefore, Applicants submit that, since there are elements of the claimed invention that are not taught or suggest by Clarke and this reference cannot be modified without violating the objective analysis guidelines of MPEP §2143.01, the present invention is clearly patentable over Clarke. Applicants, therefore, respectfully request that the Examiner reconsider and withdraw this rejection.

IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 18-35, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

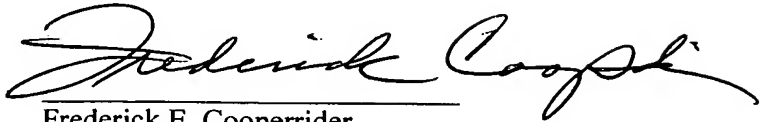
Serial No. 10/693,494
Docket No. US01-03014

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: _____

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Frederick E. Cooperrider
Registration No. 36,769

McGinn & Gibb, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254